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SCIENCE NEWS LETTER

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THE WEEKLY SUMMARY OF CURRENT SCIENCE • NOVEMBER 28, 1942

Nova Puppis

See Page 340

A SCIENCE SERVICE PUBLICATION

Do You Know?

Last year's death rate was the lowest in our history.

Burma, the size of Texas, has double the population of that state.

Boric acid can be made by the interaction of sulfuric acid and borax.

White potatoes contain about 78% water and only 11% to 21% starch.

It was not until 1909 that the body louse was discovered to be the carrier of typhus.

A normal person can become temporarily colorblind by means of hypnotic suggestion.

The cattle grub which destroys 10% of our beef can be controlled by rubbing the animal's back with rotenone dust.

Due to a shortage of imported wheat, Venezuelans are now eating bread made partly from banana flour—and liking it.

The only venomous snakes in the United States are the rattlesnake, copperhead, coral snake and water moccasin.

North American Indians had only two domesticated animals, the dog and the turkey; the latter used mostly for its feathers.

Cabbages should be stored upside down so that moisture will not rot them.

Effective pasteurization of all milk could wipe out undulant fever in our rural areas.

Question Box

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PUBLIC HEALTH

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RESOURCES

What vitamin is found in persimmon leaves? p. 350.

Malaria is not confined to the tropics; in 1937 there were 4,000,000 cases in the United States.

An incidental annoyance during the British blitz was the invasion of flies, attracted by bombed food stores.

The germs of tularemia, dread rabbit fever, are particularly dangerous, since they can penetrate even healthy human skin.

South American yerba maté is rich in caffeine and chlorophyll, and has some vitamin content.

No matter where trout are, they have a universal tendency to seek larger bodies of water as they grow.

The Western Hemisphere produces half the world's annual cotton crop, four-fifths of which is grown in the United States.

SCIENCE NEWS LETTER

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ASTRONOMY

Distant Planet

Orbits of obscure double star point to existence of a planet among the suns outside our own solar system. May never be seen.

► **FIRST EVIDENCE** ever produced for the existence of any planet among the billions of suns that swarm outside our own little solar system was presented before the meeting of the American Philosophical Society by K. Aa. Strand, research associate at the Sproul Observatory of Swarthmore College, who has just joined the U. S. Army.

Nobody has ever seen the planet. Probably nobody ever will. Like many other things of whose existence we are fairly certain, this extra-solar-system planet manifests its presence by what it does.

Mr. Strand was making a study of a comparatively obscure double star in Cygnus, the Swan or Northern Cross. As with all objects of its class, the two stars that form the double star circle around and around each other in an eternal dance.

But Mr. Strand noticed on the many photographic plates he examined that the orbits of the two stars were not exactly smooth. Something caused irregularities in the star paths—perturbations, astronomers call them.

The only thing that could explain the irregular pattern of the twin-star dance was the presence of a third object, close enough and massive enough to drag one or both slightly out of orbit by gravitational pull. Calculations indicated that this dark third member of the stellar dance team must be an object far smaller than any known star—only one-sixtieth the mass of the sun, which is one of the smaller stars. This gives it a mass about 16 times that of Jupiter's, hugest planet in our own system. It swings around the star that is its sun once every 4.9 years, and has a decidedly lopsided orbit, contrasting strongly with the nearly circular paths of the planets of our own system.

Science News Letter, November 28, 1942

Dodder Transmits Virus

► **DEMONSTRATION** that the twin-ing parasitic plant, dodder, can transmit a virus disease from one plant to another, and that heat can kill the virus, was presented before the Society by Dr. L. O. Kunkel of the Rockefeller Institute for

Medical Research at Princeton, N. J.

Since dodder does not stick exclusively to one plant, but may swing from one to another like any other vine, Dr. Kunkel made his experiment by letting it trail from sick potato plants to healthy periwinkles. The potato plants had witches' broom disease, which causes abnormal growths of bunchy, stringy branches. This symptom soon appeared on the periwinkle plants.

It proved possible to render the virus harmless to the periwinkles by heating them; but the potato vines would not stand high enough temperature to inactivate or kill the virus. However, further experiments proved that the witches' broom virus could be rendered harmless in seed potatoes by heating them.

Science News Letter, November 28, 1942

Earliest Saber-Tooth

► **THE EARLIEST** member of the remarkable saber-tooth cat tribe thus far discovered was described before the meeting by Prof. William B. Scott, veteran Princeton paleontologist. It is represented by a single specimen found in a formation in Utah, from which also came abundant bones of herbivorous animals, including long-extinct rhinoceroses, horses, camels and several other animal types that have no present-day representatives. The geologic age, Prof. Scott said, was intermediate between Eocene and Oligocene, which many

geologists set at some 50 or 60 million years ago.

Science News Letter, November 28, 1942

ASTRONOMY

Finnish Woman Discovers Another New Comet

► **FOR THE** second time within the year, a Finnish woman astronomer, Miss L. Oterma of Turku Observatory, has discovered a new comet.

This one is in the constellation of Taurus, the Bull, and it is 13th magnitude, much too faint to be seen without telescopic aid.

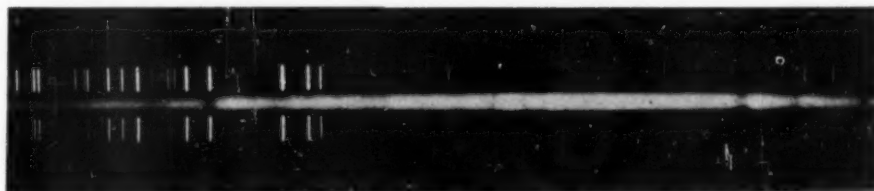
Radiograms through international astronomical channels to Harvard Observatory, American clearing house for astronomical reports, brought to America news of the discovery. Patrol camera plates at Harvard when inspected by Dr. Fred L. Whipple verified the comet's existence and position.

The new comet is near the celestial equator and moving northward. It is not far from the famous star cluster, the Hyades, shaped like a V, which rises in the eastern sky early these autumn evenings. More observations and considerable mathematical computations will be necessary before it is determined whether the new comet will become brighter.

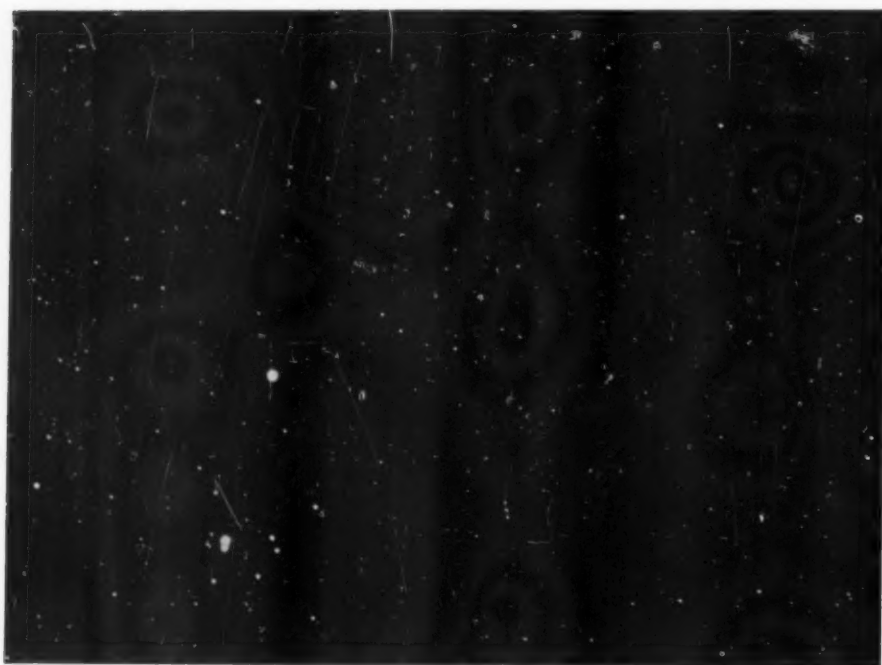
Two other comets were reported previously by Miss Oterma this year. One of these, discovered in February, was new, although news of it did not reach America until last month. The other report was of a comet spotted by Miss Oterma in September which proved to be a rediscovery of a comet previously known.

Since comets are named after their discoverers, there are thus two Oterma comets in the astronomical records. They are being numbered to distinguish them.

Science News Letter, November 28, 1942



WHAT ASTRONOMERS SEE IN A NOVA—The violet-blue end of the spectrum of Nova Puppis taken at the Observatory of the University of Michigan on Nov. 12. Light from the star is shown in the center bordered by comparison lines of earthly spectra. Bright bands in the nova's spectrum are hazy and bordered on their sides of shorter wavelength by dark lines. Magnesium and titanium show only dark lines which are shifted toward the violet in the same direction as the lines of hydrogen and iron. (See SNL, Nov. 21, p. 324).



COMPARE this photograph of the night sky taken in Peru some time ago with the Harvard Observatory photograph on the front cover of this week's SCIENCE NEWS LETTER. Both show the same region of the sky. The two bright stars appearing on each photograph are the same. But where the Nova Puppis now blazes forth there was nothing when this photograph was taken.

ASTRONOMY

May Be Supernova

Longest exposure photographs taken with largest telescopes show no star where Nova Puppis now shines. This means an increase in brightness of 6,000,000 times.

See Front Cover

➤ HARVARD astronomers searching their longest exposure photographs taken through their largest telescopes are unable to find any star that existed in past years where Nova Puppis flashed forth in the sky.

This means that the star increased in brilliance at least 6,000,000 times, a rise of 17 magnitudes at least, because the star must have been fainter than the 18th magnitude that can be detected by stellar photography.

Miss Constance D. Boyd and Dr. Fred L. Whipple made preliminary measures of plates going to the 16th magnitude, and found no star present where the nova is located. And even on three-hour exposure plates taken with the Bruce 24-inch camera at Harvard's southern station at Bloemfontein, South Africa, which goes nearly to the 18th magnitude, they fail to find a trace of the star.

The great increase in brilliance almost puts the star in the ranks of the supernovae, which are usually observed only in the far spiral nebulae. These are galaxies like our own Milky Way, but they are very numerous. Consequently, supernovae are fairly frequent, but only about every 300 or 500 years does one appear in a galaxy. However, further studies of magnitude changes and spectrum must be made before the character of this latest nova can be ascertained.

Meanwhile, Nova Puppis is fading rapidly, nearly a magnitude every 24 hours. It reached its peak on November 12. It is now approaching disappearance from naked-eye view.

Amateur astronomers, particularly members of the American Association of Variable Star Observers, are being urged to watch it regularly, to see if it suddenly increases its light again. Fluctuations may be expected.

Spectra of the nova are being taken at

all of the large observatories. Such spectra show the rapid changes which are taking place in the condition of the star following its maximum light. There is indication that a shell of gas may be expanding around the star at a speed of possibly 1,000 kilometers per second. The star's distance also seems to be very great, probably on the order of several thousand light years. This is more or less confirmed by the extreme faintness before its outburst.

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ASTRONOMY

Demon Star May Be Quadruplets, Not Triplets

➤ AMATEUR ASTRONOMERS and constellation students all know the star Algol, in the constellation of Perseus, as one which regularly undergoes a change in its light. At intervals of $2\frac{3}{4}$ days, it loses about a magnitude in its brightness, taking five hours to reach minimum brightness and five hours to come back to normal brightness.

Ever since Goodricke, a youth of 19, deaf and dumb, proposed in 1783, that the Demon Star (El Ghou to the Arabs) was double, and that the light fluctuations resulted from eclipses of one star by the other, Algol has been carefully watched by astronomers. There is no doubt that Goodricke was right, and since his day astronomers have decided there is a third star—Algol C—which is invisible with present telescopes, but makes its presence known by its gravitational effect on the other two stars.

Now, Dr. Zdenek Kopal, of Harvard Observatory, proposes that there may be a fourth component of the system, and that Algol, one star to the eye and the telescope, is really quadruplets. He bases his proposal on slight irregularities in the times of Algol's minimum brightnesses, and evidence that the principal stars are in rapid rotation, but not on axes which are perpendicular to the plane in which they revolve—this is contrary to the usual expectation.

If a fourth Algol does exist—Algol D, if you wish—Dr. Kopal ventures that it will be no ordinary star, but of the class called subdwarf, of which only a few examples are known. These are stars of high mass and low luminosity, but not as dense and faint as the "white dwarfs" of which the companion of Sirius is the best example.

Science News Letter, November 28, 1942

Of 160,000 licensed American physicians, only about $4\frac{1}{2}\%$ are women.

MEDICINE

Treatment Goes to War

The Sister Kenny method of caring for infantile paralysis is now being used to treat various bone and joint injuries in the Army.

► THE SISTER KENNY treatment of infantile paralysis has gone to war. Captain Vernon L. Hart, M. C., U. S. Army, reports (*Journal, American Medical Association*, Nov. 21), that he is now using this method at the Station Hospital, Camp Cooke, Calif., in treatment of various bone and joint injuries and specifically in treating "various internal derangement injuries of the knee joint."

Following an injury to a knee joint, he points out, muscle spasm, mental alienation of muscle and incoordination of muscle function are found. It is these three symptoms which Miss Kenny recognizes and treats in infantile paralysis patients.

"These three symptoms can be demonstrated and they must be treated and relieved because they are the pathologic basis for deformity and disability," Capt. Hart says with reference to knee joint injuries.

Torn cartilage or ruptured ligaments may require subsequent surgical treatment but Capt. Hart says the Kenny treatment should be applied first. In the case of broken knee cap or leg bone, on the other hand, immediate surgical repair is necessary before the Kenny treatment can be started.

Muscle spasm is present in the muscles that bend the knee immediately after injury, Capt. Hart points out. Certain muscles are shortened because of the pain reflex spasm and a deformity of the knee joint is the result. The muscle in spasm cannot relax and allow itself to lengthen and any attempt to lengthen it only aggravates the spasm and increases the deformity. The temporary contracture and deformity may become permanent, he warns, unless the condition is treated.

First step in the treatment, therefore, is to relieve the spasm. This is done by putting the patient to bed with his leg in proper position and the application, as advised in the Kenny treatment, of moist heat to the involved muscles and tendons.

Within two to four days, pain, spasm and deformity are usually relieved and the patient is then taught to be aware of the involved muscle and its normal action on the joint. Following this, he

is gradually retrained in the use of the muscles.

"Patients with the common types of internal derangement are usually ambulatory after a week or ten days, when they have regained normal voluntary control of the quadriceps motor mechanism," Capt. Hart reports. "For several days they walk with the aid of a chair, cane or crutch and after two or three weeks return to duty. I have been impressed with the unusually high percentage of normal knees following this system of treatment and the extremely small number of patients with recurrence of disability."

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PUBLIC HEALTH

Place of Residence Affects Tooth Decay

► THE BEST teeth in the nation, at least among children and men of military age, are found in Arkansas and the South and Southwest generally, Dr. Bion R. East, dentist and public health professor of the College of Physicians and Surgeons, Columbia University, stated at the meeting of the American Public Health Association in St. Louis.

The worst teeth are found in New England, Dr. East reported after studying draft records of the 1918 Army, the 1863-1864 Federal Army and the preliminary figures from the 1940-1942 draft. The 1918 records showed that when measured by the Army's standards, the teeth of the men of Vermont were 35 times poorer than those of Arkansas.

Missouri rated high in excellence of its men's teeth in 1918. Study of draft rejections then showed that only three states in the nation had lower rejection rates for dental defects than did Missouri.

"The probability that the reported differences were not due to chance," Dr. East stated, "is strengthened by similar results obtained in a survey made of U. S. Navy recruits of 1934. In that survey the New England men, when compared with those of other sections of the country, also had the most evidence of past and present tooth decay. Ar-

kansas, the state with the lowest rejection rate for dental defects in the draft of 1918, had the best record in this respect in the Navy's survey of 1934.

"Preliminary reports from the drafts of 1940-42 suggest that marked variations in the magnitude of the rejection rates for dental defects will again prevail among the different states. The indications are that New England will again lead the rest of the country in the percentage of men rejected for military service for poor teeth and that the men of the southern and southwestern states will again have the low rates. Similar trends in the distribution of tooth decay were found in dental surveys of children residing in different states."

Reasons for the relation between tooth decay and place of residence were not given by Dr. East, but his findings coincide with earlier findings of U. S. Public Health Service scientists on the relation of fluorine in the drinking water, mottled enamel and tooth decay. Fluorine in drinking water and the mottled enamel it causes are both prevalent in the southwest, but the mottled enamel teeth rarely decay. New England water supplies, so far as they have been tested, are fluorine-free.

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ASTRONOMY

First Photo of Nova Obtained by Amateur

► A CHECK has revealed that the first photographic record of Nova Puppis obtained at the Mt. Wilson Observatory and probably in the entire United States was secured not by an astronomer but by Anthony Wausnock, who acts as steward at the "Monastery" where the scientists live while working with the telescopes on Mt. Wilson. The photograph was taken on Tuesday, Nov. 10, from 4:10 to 4:35 a.m. PWT.

Mr. Wausnock has made it his hobby to photograph the lights of the cities below Mt. Wilson. By accident the photograph taken on the morning of Nov. 10 happened to include the nova, which appears as a bright streak on the upper left hand corner of the plate. (The stars show as streaks since they were moving across the sky during the 30 minutes the plate was exposed). The second brightest star in the sky, Canopus, shows as a bright streak near the center of the picture. A comparison of the two streaks indicates that Nova Puppis looked nearly as bright as Canopus when the exposure was made.

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PSYCHOLOGY—PHYSICS

Detect Camouflage

Men with faulty color vision have advantage in spotting camouflage but colorblind men don't need to rush to enlist—Army probably has enough.

► OBSERVERS with weak color vision do have an advantage in detecting faulty camouflage, Dr. Deane B. Judd, of the National Bureau of Standards, told the Washington Academy of Sciences.

This need not be a signal for colorblind men to rush to enlist in the Air Forces, however. Men who are completely colorblind or even partially colorblind do not have this advantage, Dr. Judd said. And since, out of every 20 men, about one man has weak color vision and another is colorblind, the Army probably already has a good share of men capable of spotting the enemy's blunders in camouflage.

The most common form of colorblindness is the inability to distinguish red from green. Men with this color vision defect find it difficult to pick out ripe strawberries from green or to pick a rotten apple from a barrel of red apples.

Since the vision of such persons for blue and yellow is normal, they are said to be only partially colorblind.

To hide a military position from such a person it would be necessary to see that it was no lighter and no darker than the surrounding country. And it must be no bluer or no yellower.

But the partially colorblind person would not notice if the position happened to be a little redder or a little greener than objects around it.

The partially colorblind person, therefore, usually has no advantage over the man with normal color vision in detecting camouflage. If a roof or a gun-shield is painted so that the normal eye cannot tell it from the ground or the foliage, the partially colorblind person cannot distinguish it either.

Since nature provides the best camouflage, the Army usually prefers to use actual vegetation or dirt whenever possible to hide positions. But cut branches change color when they dry out and the leaves wilt. Dirt used in this way may dry out more rapidly after a rainstorm than the dirt on the ground. This produces slight differences in color and results in imperfect camouflage. Another fault in camouflage is in paint intended to match the surroundings. Such paint, even when it is a close match,

is likely to differ in reflectances in some portions of the spectrum.

It is such imperfections, not noticeable to the normal eye, that are picked up by those with weak color vision.

There are a few situations in which the red-green colorblind man has an advantage in detecting camouflage, Dr. Judd pointed out. In a variegated pattern made up of patches of reddish brown earth and yellowish green foliage, areas that are a little too light or too bluish are lost to the normal eye because of the larger red-green differences.

But the colorblind observer doesn't see a variegated pattern of irregular red and green splotches. To him, there is a nearly uniform yellowish-brown field. A spot that is too light or too bluish would show up conspicuously to his eyes.

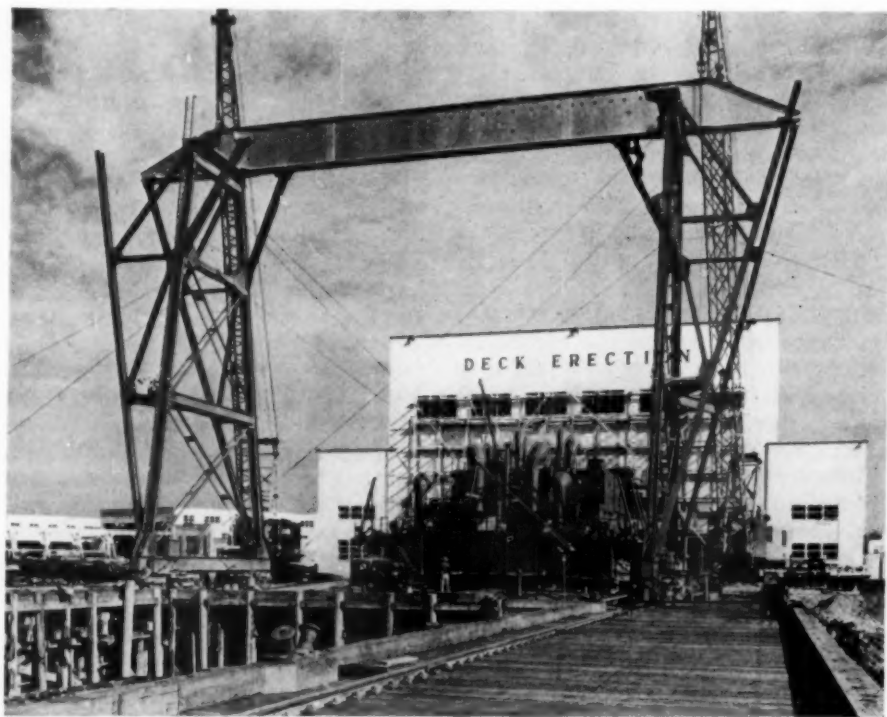
The normal individual cannot make use of filters to fake weak color vision in order to detect camouflage, Dr. Judd indicated. In order to screen out red and green, a filter would also screen out most of the light and make it very difficult to see anything. And the filter would not accurately duplicate the color vision of the partially colorblind person at that.

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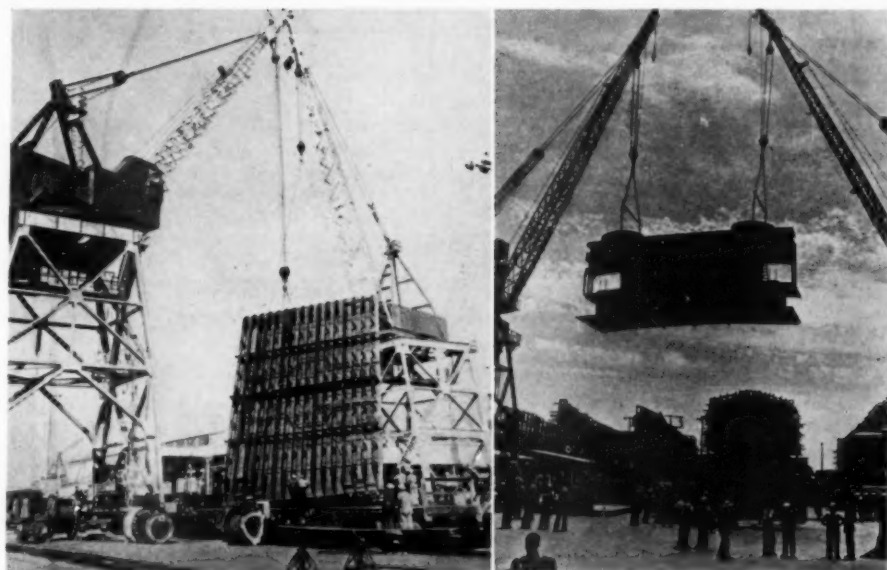
ENGINEERING

Yards Break All Records, Admiral Land Reports

► FROM KEEL-LAYING to launching, work on our merchant ships is being speeded at whirlwind tempo. The Ec-2 ship, for example, has had production time cut by more than two-thirds during the past eight months, Rear Admiral Emory S. Land, chairman of the U. S. Maritime Commission and head of the War Shipping Administration, declared in his presidential address before the Society of Naval Architects and Marine Engineers meeting in New York. "We have now expanded merchant shipbuilding facilities to the point where there are more than 60 yards, having



SHIPBUILDING SPEED—Assembly line methods are what enables the shipbuilder, Kaiser, to put his ships together so fast for war use. The deckhouse is erected in the "Deck Erection" house shown here. It starts at the back and is moved forward through the various stages of completion. Finally it moves outside. Then a huge crane lifts the deckhouse onto the ship in the dock in foreground where the various huge parts are fastened together.



PREFABRICATION—A deckhouse is here being lowered into place on a ship being built in record time for war use. The huge section on the left is a part of the hull. The photographs and the one on the facing page, showing modern prefabrication methods of ship construction, are official photographs of the U. S. Maritime Commission.

in excess of 300 ways," he declared, "constructing various types of vessels for the Maritime Commission."

Over 6,000,000 tons of shipping had been contracted for this year up to October 1, despite the diversion of a considerable part of merchant shipbuilding capacity to the construction of spe-

cial types of ships for the armed forces, Admiral Land reported. And the Maritime Commission not only expects to meet the goal of 8,000,000 tons for this year, but also the President's demand for 16,000,000 tons of ocean-going vessels for 1943.

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NUTRITION

Foods Keep Vitamins

Fruits dehydrated by new processes retain more vitamins than when sundried. Several dehydrated vegetables better than canned.

➤ MANY VITAMINS are found in dehydrated foods if they are properly treated, Dr. Agnes Fay Morgan, head of the Home Economics Department of the University of California, told the representatives of the dehydration industry at the Western Regional Laboratory in Albany, Calif., summing up results on vitamin retention brought out by the past several years of research at the Berkeley university.

Fruits dehydrated under the new factory processes retain more vitamins than those preserved by sundrying. While prunes, peaches, and apricots are good sources of vitamin C, only those treated with sulfur dioxide retain this vitamin.

On the other hand, the sulfur treatment destroys two thirds of the vitamin B₁, as the thiamin molecule is split by sulfur dioxide. Since peaches and apricots are not rich in B₁, sulfuring is probably desirable in their dehydration. Vitamin A is stable and is retained in both dehydrated and sundried fruits, but riboflavin is quickly destroyed by light so that sundried fruit has lost most of its vitamin B₂, while dehydrated fruit shielded from light, retains it.

In the past two or three years, Dr. Morgan and her staff have been interested in the retention of vitamins in dehydrated vegetables.

Several of the dehydrated vegetables

have better vitamin retention than the same ones canned. Spinach, for instance, lost 75% of its B₁ when canned, as compared to the fresh spinach, but in dehydrated spinach the B₁ was preserved almost 100%; canned peas lost 73% of B₁ as compared to a loss of 10 to 20% in the dehydrated. Concentrated tomato juice, tomato paste, and dehydrated broccoli are good sources of vitamin C, Dr. Morgan pointed out.

In summing up the value of the dehydrated vegetables, she stated that the vitamin C loss was from 20% for broccoli to 80% for string beans. For B₁, the loss in several vegetables ran from 14% to 33%; B₂ 25% to 50%, with an exception in dehydrated carrots which had a loss of only 12%. In all the vegetables tested the carotene destruction was small, while 1/3 to 1/2 of the nicotinic acid was lost, probably due to leaching.

Studies on meat showed that there was less loss of vitamins B₁, B₂, and nicotinic acid in dehydrated than in canned meat. The cooked dehydrated meat compared favorably with the cooked fresh meat, since there is always some loss in preparation for the table.

Dr. Morgan warned research workers against the short methods of vitamin determination.

Vitamin assays up to three to four years ago were solely a matter of feeding animals. These take at least two months and are only reproducible within 15 to 20%. Chemists have attempted to shorten the process by the use of chemical and micro-biological methods.

"There is no consistency between the various tests," Dr. Morgan stated.

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CHEMISTRY

Resins Improve Method Of Softening Water

➤ NEW RESINS are replacing old zeolite minerals and greensands for special uses requiring softened water of excellent quality, such as in breweries, canneries and beverage manufacturers.

Extended application of the resins to prevent spoilage of medicinal enzyme preparations, to purify drugs, and to recover vitally needed metals from industrial wastes, was predicted by Dr. Robert J. Meyers of the Resinous Products and Chemical Company Laboratories of Philadelphia, speaking at a meeting of the Western New York Section of the American Chemical Society at Buffalo.

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ANTHROPOLOGY

Filipino Is Related to Chinese, Not Malaysians

► THE FILIPINOS, dominant people of the great Philippine archipelago, are related to the southern Chinese rather than to the Malaysians as commonly supposed, says Herbert W. Krieger, anthropologist of the Smithsonian Institution in Washington.

The Filipinos, who have a long tradition of culture and accomplishment behind them, have never submitted easily to a conqueror. Heroic proof was offered in their defense of their islands against the Japanese, in which 20,000 Filipinos gave their lives.

Members of an East Asiatic, Mongoloid race, they apparently came to the Philippines much later than the black pygmy people—the Negritos—who seem to have been the first arrivals. Since the Negritos have never been boat-builders, anthropologists assume they came by way of a land bridge from the Malay Peninsula, whose people they closely resemble.

The diversity of language in the Philippines Mr. Krieger explains as partly due to the mountainous nature of the islands, which kept certain groups isolated for many centuries. The people became united in opposition to early Spanish colonists and in their desire for national independence.

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PSYCHIATRY

Overworked Generals Get War Jitters Too

► DOES the high command need a psychiatrist?

Only to prevent sudden explosions due to war strain and overwork, it is suggested by Dr. Emilio Mira who, as chief psychiatrist for the Spanish Loyalist armies, has seen war's effect on both men and officers for many years. Dr. Mira is now professor of psychiatry at the University of Buenos Aires.

"By refusing to rest, the overworked leader may lose a battle," Dr. Mira told the New York Academy of Medicine in the second of the three Salmon lectures. "Or his fatigue may break out in sudden explosive behavior, drunkenness, or smoldering resentment."

To prevent this, Dr. Mira proposed that psychiatrists be attached to military staffs which are planning and conducting strategy. The preventive task of these psychiatrists would be just as vital

as that of aviation physicians who guard the mental and physical health of pilots.

A simple, ten-minute test which Dr. Mira calls "Myokinetic Psychodiagnosis" would measure the mental fitness of officer or soldier at any given moment. "It is not designed to measure his I.Q., which is, naturally, taken for granted."

War acts in erratic fashion, making some unstable individuals more healthy, and producing abnormal behavior among "normals." Most common symptoms of war among previously healthy soldiers are hysterical outbursts, anxiety states and loss of motor control, Dr. Mira says.

Oddly enough, it is harder to cure a mild case of the jitters, such as trembling of the fingers, than a case of complete paralysis which may yield readily to treatment. Trembling or paralysis is due, Dr. Mira believes, to the inhibitions against movement which have been set up in the brain due to fear and exhaustion. This may or may not be due, on a deeper level, to a subconscious desire to escape from an intolerable situation. Dr. Mira believes it is not.

Science News Letter, November 28, 1942

INVENTION

New Wood Burning Stove Connects to Oil Heater

► OWNERS of oil burners who are able to secure a wood supply will be able to substitute wood for oil, according to an announcement by William L. Slate, director of the Connecticut Agricultural Experiment Station.

As a result of research in cooperation with Yale University and the University of New Hampshire, the station has developed a wood-burning unit which can be built out of firebrick by any good mechanic and then connected with an oil heater of the convertible type. Wood in the fuel magazine is carried by gravity to the combustion zone, where it is distilled with gas. After introducing secondary air, the gas passes into the furnace and burns at high temperature.

This emergency unit holds one-tenth cord of wood, which is sufficient to heat a ten-room house for 12 hours in cold weather without further attention. The only metal part required is the cast-iron door and frame, for which production arrangements are now being made. A special bulletin giving the details of construction and operation may be secured from the station or from the Connecticut Forest and Park Association, P.O. Box 1577, New Haven, Conn.

Science News Letter, November 28, 1942

IN SCIENCE

PSYCHIATRY

Learn to Think of Today In Terms of Next 20 Years

► WE MUST learn to think about today in a way that also takes 1950 and 1960 into consideration, Dr. James S. Plant, director of the Essex County Juvenile Clinic, Newark, N. J., declared at the meeting of the National Committee for Mental Hygiene in New York City.

War, he said, is a surcease from "the real struggle as to how man shall live with man."

After the war, he predicted, "every sort of demagogue and ism" will spring up and there will be "bitter disillusionment aplenty as each ready road to what man searches for turns out to be a false trail."

Post-war problems, he said, are really only the "blank dismay" of united and purposeful peoples when they find themselves once more facing the perplexities of how man is to live with his fellow man and himself.

We must learn, Dr. Plant advised, to think of the war and the years of bitter confusion that will follow as part of man's progress toward his dream of dignity, liberty and freedom for each man.

Science News Letter, November 28, 1942

GENERAL SCIENCE

Fellowships Discontinued By Westinghouse

► BECAUSE MAJOR efforts of both research and production are being devoted to the war job, the Westinghouse Electric & Manufacturing Company has discontinued for the duration its post-doctorate research fellowships that have been awarded annually for the past five years.

Scientists of advanced training are now engaged in war research and Westinghouse officials report a shortage of research workers with adequate training. Those who in normal times would be interested in research scholarships will be directed to research work of greatest value to the war effort.

Science News Letter, November 28, 1942

NE FIELDS

PHARMACOLOGY

Balkan Plant Gives More Effective Drug

► A CRYSTALLINE substance from a Balkan digitalis plant, or foxglove, has proved more effective in treating heart disease than the digitalis in common use, Dr. Francis E. Chamberlain and Dr. Maurice Sokolow, of the University of California Hospital, report.

The substance is called cedilanid and is found only in *Digitalis lanata*. Terming it the "first superior substitute for digitalis yet to be found," the California physicians say that it produces the same effect as digitalis and acts more rapidly. In many cases, they report, patients were benefited within 10 to 20 minutes after being given cedilanid. It may be given by mouth or by injection into a vein. Their report states that this drug is now on the market and readily available to physicians.

Science News Letter, November 28, 1942

CHEMISTRY

Structure and Composition Of Biotin Discovered

► THE STRUCTURAL chemical formula of biotin, important but little understood member of the vitamin B group, was announced by Prof. Vincent du Vigneaud, of Cornell University Medical College, at the meeting of the New York Section of the American Chemical Society.

Synthesis of the vitamin will probably soon follow. This will be a great aid to scientists seeking more exact knowledge of its function, since it is so difficult to extract biotin from natural sources, such as liver, that at the present commercial market price one ounce, if that much were available, would cost about \$4,000,000.

Biotin is necessary for the growth of yeast and other microorganisms. It cures rats of the skin disease known as egg-white injury. It may play a role in cancer and just recently has been found necessary to prevent a skin disease that develops in rats when given sulfa drugs.

The role of biotin in human nutrition

is not yet known, but with synthesis and consequent ample supplies of the vitamin now in sight, this knowledge may soon be gained.

According to the newly-discovered structural formula, biotin has the forbidding scientific name of 2'-keto-3, 4-imidazolido-2-tetrahydrothiophenevaleric acid.

Associated with Prof. de Vigneaud in the two-year research leading to the elucidation of the formula were: Dr. Dean Burk, Dr. Klaus Hofmann and Dr. Donald B. Melville at Cornell; and Dr. Karl Folkers, Dr. Wolf, Dr. Mozingo, Dr. John C. Keresztesy and Dr. Stanton A. Harris, of the Research Laboratories of Merck and Co.

Science News Letter, November 28, 1942

MEDICINE

New Test Improves Operation for Sciatica

► A NEW TEST that tells more exactly the spot for operation on the back in cases of sciatica and low back pain is reported by Dr. Walter E. Dandy, of Johns Hopkins Hospital (*Journal, American Medical Association*, Oct. 24).

In almost all cases of sciatica with low backache, Dr. Dandy points out, the trouble is due to rupture or defect of an intervertebral disk, the layer of fibro-cartilage between the bodies of the vertebrae. Treatment by operation is "absolutely safe and a cure is practically assured," he states.

The diagnosis, he believes, can be made solely on the patient's story of attacks of sciatica and low backache occurring after a relatively trivial injury, such as a lift, bend or strain, with the pain made worse during attacks by coughing or sneezing. In almost all cases the affected disks are at the fourth or fifth lumbar vertebra.

In order to determine the location more precisely, Dr. Dandy says that during the operation the surgeon should push the spines of the fourth and fifth spinous processes downward and determine the mobility of each vertebra. The affected disk will be where the greater movement is shown because the defective disk has weakened the spinal column locally and this causes the mobility.

This free play at the disk is responsible for the intensification of the pain by coughing or sneezing and if the patient can stiffen his back before the cough or sneeze, the pain will be ameliorated.

Science News Letter, November 28, 1942

MEDICINE

Sex as Well as Vitamins May Play Gray Hair Role

► SEX as well as vitamins may play a role in the gray hair problem, it appears from experiments reported by Dr. B. Gerstl, of Yale University School of Medicine, and Dr. B. Lustig and Dr. A. R. Goldfarb, of the Lawrence Richard Bruce Biochemical and Research Laboratory, Stamford, Conn. (*Science*, Nov. 13).

When mice of the C-57 strain were kept on a diet lacking certain vitamins, gray hair developed in more than half of the surviving males but in only 6% of the surviving females within 30 days. Within 75 days all but one of the males had become gray, the scientists report, while 13% of the surviving females showed only slight changes in hair color. The same sex differences showed up in response to daily doses of para-aminobenzoic acid, calcium pantothenate and a combination of the two.

These findings, suggesting that gray hair produced by certain vitamin deficiencies may also depend on sex hormone factors, seem in line with the work of another scientist, Dr. T. R. Forbes, of Johns Hopkins University, who found that female sex hormone pellets implanted under the skin of white rats produced local darkening of their hair while certain male sex hormone pellets failed to do this.

Science News Letter, November 28, 1942

NUTRITION

Carp, Alewife, and Skate For Meatless Days

► "FISH on Friday" may for the duration become carp on Monday, quillback on Tuesday, skate on Wednesday and alewife on Thursday, it appears from a suggestion for meatless days offered by the U. S. Fish and Wildlife Service.

Fish contains almost all the nourishing qualities of meat, it is pointed out. Greater variety in meals may be achieved by making use of many unfamiliar kinds of fish, or of those known now only in certain localities. The Great Lakes and other lakes and rivers of the Midwest offer many delicious varieties of fish, and in addition there are many kinds previously discarded by salt-water fishermen that could contribute much nourishment to the diet on meatless days.

Most fish can be cooked by boiling, steaming, broiling, pan frying, and deep fat frying.

Science News Letter, November 28, 1942

ASTRONOMY

Seven Bright Stars

In an area only about a tenth of the entire sky, nearly half the most brilliant stars are concentrated with three in Orion's belt to aid you in finding them.

By JAMES STOKLEY

► OF THE FIFTEEN brightest stars in the sky, seven are contained in a small region which, on December evenings, is seen to the east and southeast. This area is perhaps a tenth of the entire sky, and no other of comparable smallness includes so many bright stars. And during December, 1942, it is made even more brilliant by the presence of two bright planets, now passing through these constellations in the course of their wanderings around the heavens.

The dominant star group of this region is Orion, the warrior, in the southeast. The three stars in a row, forming the belt of this great warrior, make it easy to find. Above and to the left of the belt is the star Betelgeuse; below and to the right is Rigel. Both of these stars are of the first magnitude, though Rigel, the brighter, is exceeded by four other objects nearby.

Most brilliant star or planet now visible is Jupiter, almost directly east, just to the right of the first magnitude star Pollux, which is one of the twins—Gemini. Second to Jupiter is the star Sirius, the dog star, in Canis Major, the great dog, which is below Betelgeuse. Sirius is the brightest star in the whole sky. Then, in order of brilliance, comes the other planet, Saturn, which is in Taurus, the bull, above and to the right of Orion, and close to the bright star Aldebaran. The next brightest object is the star Capella, in Auriga, the charioteer, high above Gemini, in the east. The last of our brilliant seven is Procyon, in Canis Minor, the lesser dog, which is between Gemini and Canis Major. Procyon is only slightly fainter than Rigel.

Deneb and Vega

Two other bright stars are to be seen in other parts of the sky. To the northwest is Cygnus, the swan, a group often called the northern cross, because of the way the stars are arranged. The cross leans a little to the right, and the star Deneb marks its top. Below this figure is Vega, of Lyra, the lyre. Though this is a brilliant star, it is now seen so low in the heavens that it appears quite faint

—of the second magnitude—on account of the absorption of its light by the earth's atmosphere.

Now that we can find these splendid ornaments of the December evening sky, it might be interesting to learn something about them individually.

First there is Jupiter. Like all the planets which revolve around the sun, this shines by reflected sunlight. It is the largest of the planets; its volume, though more than 1,300 times that of earth and more than the total of all the other planets, is still only about a thousandth that of the sun. Its diameter is 86,720 miles (the earth is 7,927 miles) and its average distance from the sun is 483,200,000 miles (compared with 93,000,000 for earth). Its surface is very cold, about 200 degrees below zero, Fahrenheit. The visible surface, however, is not solid, but the top of a thick layer of clouds of frozen methane and ammonia. These compounds are gases on our planet.

Four Large Moons

Jupiter has four large moons, seen even with a small telescope, and seven small ones, some of which are visible only with the most powerful instruments. This month its distance from earth is about 410,000,000 miles—quite close, which accounts for the planet's great brilliance.

Saturn, our other December planet, is about 751,000,000 miles from earth at present, much closer than usual. Its distance from the sun is 885,900,000 miles as an average, though the actual

figure may vary nearly 50,000,000 miles from this value. Saturn's diameter is 71,500 miles, and its structure is similar to that of Jupiter and even colder, because of its remoteness from the sun.

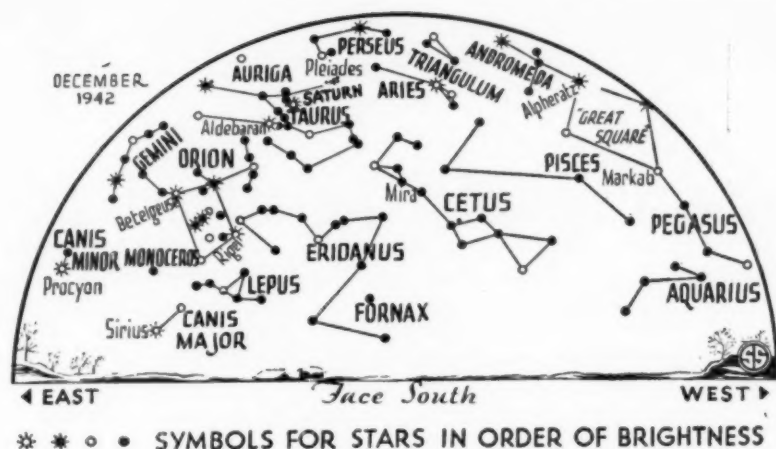
The most famous feature of Saturn is the system of rings surrounding it, which can be seen through a telescope of moderate power. The system has an outside diameter of 171,000 miles, it is 41,500 miles wide, and there is a space of about 8,250 miles between the inner ring and the planet's surface, about enough to squeeze the earth through. These rings are not solid, but are made up of swarms of myriads of tiny moonlets, all going around together. In addition, Saturn has nine moons of more conventional size.

Each a Sun

The seven bright stars that we mentioned are vastly farther away. Each is a sun, like ours, shining by its own light. Not only the brightest, Sirius is also the closest, with a distance of about 52,000,000,000 miles. Another way of expressing this is to say that its distance is 8.6 light years. One light year is the distance (about 6 trillion miles) that light (with a speed of 186,000 miles per second) will travel in one year. Sirius is about thirty times as bright as our sun, and is attended by a curious smaller star companion visible only through powerful telescopes. Of the class of "white dwarfs," this companion is made of stuff so dense that a handful would weigh many tons.

Capella is farther away, about 42 light years, and is 150 times the sun's brightness. It also is attended by a small companion, which revolves around it every 104 days. No telescope reveals this com-





panion though the spectroscope, which analyzes star light, reveals its presence.

In actual candlepower, Rigel is by far the brightest of our stellar septet, for it exceeds the sun some 21,000 times. Its distance is 540 light years; if it were as close as Sirius it would be brighter than any planets ever appear. The spectroscope shows that it also has a companion, that goes around it once in about three weeks.

Procyon, which comes next, is shown by a large telescope to be a double star, and the two parts revolve around their center of gravity in 40 years. The larger member contains about 1.4 times as much matter as the sun, and the smaller about 0.4 as much. Most of the light of the system comes from the larger one, which is 6.9 times the sun's candlepower. Procyon's distance is 11.1 light years, one of our close neighbors.

Points of Light

The stars are so far away that even when magnified with a powerful telescope they still appear only as points of light, not as disks like the sun or full moon. However, a few are so big and close that, with an instrument called the interferometer, it is possible to measure the diameter. Betelgeuse was one of the first measured, and its diameter is about four times the distance of the earth from the sun—some 270,000,000 miles. (The sun's diameter is only 864,100 miles!) In contrast to the companion of Sirius, it is a giant star, with very low density—so low, in fact, that if we had some on the earth we should call it an excellent vacuum! It varies in brilliance, but, intrinsically, its average brightness is 3,600 times that of the sun. Its distance is 300 light years.

Aldebaran, with characteristic red color, is 53 light years away and 91

times the brightness of the sun. In diameter it is about a third of the distance between sun and earth. It also has a faint companion, about 46,000,000,000 miles away from it.

Pollux, finally, is at a distance of 29 light years, and exceeds the sun in luminosity 25 times. As far as we know it is a single star like our sun.

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Celestial Time Table for December

Dec.	EWT	
1	4:00 p.m.	Saturn closest, 751,000,000 miles.
7	9:59 p.m.	New moon.
8	6:30 a.m.	Moon passes Venus (not visible).
	8:00 p.m.	Moon nearest, 222,600 miles.
9	2:57 a.m.	Algol at minimum.
11	11:46 p.m.	Algol at minimum.
12	Early a.m.	Meteors of Geminid shower visible.
14	1:47 p.m.	Moon in first quarter.
	8:35 p.m.	Algol at minimum.
20	12:43 p.m.	Moon passes Saturn.
22	7:40 a.m.	Sun farthest south, winter begins in northern hemisphere, summer begins in southern hemisphere.
	11:03 a.m.	Full moon.
23	7:00 p.m.	Moon farthest, 252,500 miles.
24	9:22 a.m.	Moon passes Jupiter.
29	4:41 a.m.	Algol at minimum.
30	2:37 p.m.	Moon in last quarter.

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NUTRITION

Watch for Vitamin A In Butter Substitutes

► IF BUTTER is rationed, and the prospect is already being discussed, more of us will be wondering what to spread on our bread and put in our cakes.

Most of us will turn to one of the margarines as a butter substitute for table use, though other fats may be substituted for butter in cooking. The margarines are made by churning bland fats other than butterfat in ripened milk, generally skim milk. The fats may be vegetable, nut or animal or a combina-

tion, but it is required by law that the product be labelled oleomargarine.

Butter furnishes fat, and therefore calories, and also vitamins A and D. Oleomargarine furnishes the same amount of fat (81%) and the same number of calories (3,325) per pound as butter, according to U. S. Department of Agriculture tables giving the composition of American food materials.

The amount of vitamins A and D furnished by butter varies widely, and depends largely on the cow's feed. Summer butter usually has more vitamin A than winter butter unless the cow's winter ration is reinforced with the vitamin. The amount of vitamin A in butter may vary from less than 1,400 to more than 27,000 International Units per pound. Butter in Washington, D. C., retail markets in winter has about 13,650 International Units per pound, according to U. S. Department of Agriculture figures.

Oleomargarine is not considered a good source of vitamins A and D unless it has been fortified by the addition of vitamin concentrates. Some vegetable oleomargarines have been fortified. The label tells whether they have and how much vitamin A has been added. Manufacturers of oleomargarines that contain animal fats inspected under the Federal Meat Inspection Act are not permitted to add vitamin concentrates.

The national nutrition yardstick, drawn up by leading scientists in the field of health, medicine and nutrition, calls for some butter daily, or margarine with vitamin A added.

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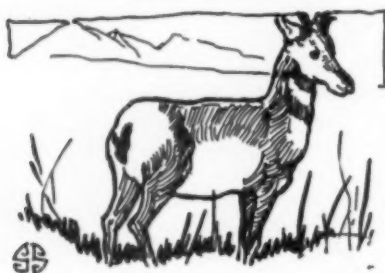
PALEONTOLOGY

"Strange Skull" Fossil Is Now Identified

► WITH TWO great bulbous projections above the middle ear region, one of the most singular mammalian skull fossils ever seen has been described at the Academy of Natural Sciences in Philadelphia with a scientific name that means "strange skull": *Xenocranium*. The name was bestowed by Dr. Edwin H. Colbert.

The extinct creature, represented only by a skull and lower jawbone, lived in what is now Wyoming some 60,000,000 years ago, near the beginning of the Age of Mammals, in the period called Oligocene by geologists. It belonged to the class known as edentates, which includes modern armadillos and their relatives.

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Airplane Roundups

► PRONGHORN antelope, fastest things that run on four legs on this continent, have been very successfully rounded up by airplane, for transplantation in trucks to new places on the range. Lee William Fisher of the Texas Game, Fish and Oyster Commission tells how, in the *Journal of Wildlife Management* (July).

Pronghorn transplantation is desirable, Mr. Fisher explains, because while the fleet little animals get along excellently with cattle on their range, they simply don't "mix" with sheep. So it is the practice so far as possible to remove them from sheep country and release them on cattle lands, where they are welcome.

First round-ups of pronghorn in Texas were carried out by men on horseback. However, the method proved slow and rather costly.

Mr. Fisher had noticed, during airplane flights made for the purpose of counting pronghorn herds, that the animals would run away from the sound of the motor. So he tried some experiments, and soon learned that small pronghorn herds could be bunched into one big herd, and then "drifted" in any desired direction, by flying a plane on the opposite side, at heights between 50 and 500 feet. A small, low-powered slow-speed plane was found most suitable for the purpose, as well as very economical to operate.

The herds are "drifted" into a big wire corral, and driven from that into a smaller pen made of strong cord. From this they are removed and examined, weighed, and loaded into trucks for transportation to their new homes.

Since adoption of this method, Mr. Fisher states, 467 animals have been

trapped and transported, with a loss of only three killed. The whole cost for

each animal was only about \$4.30.

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PUBLIC HEALTH

Tuberculosis Deaths Up

Increases since the war in Paris, England, Wales, Scotland and Canada, are indicated by authentic figures. Alarming Increases in China, Greece and Low Countries.

► AUTHENTIC figures showing increases in tuberculosis deaths since the war in Paris, England, Wales, Scotland and Canada have been obtained by the National Tuberculosis Association.

Tuberculosis deaths in Paris during the first six months of 1941 increased 10% over the deaths in the first half of 1939, and TB deaths among children from one to nine years increased 28%, the Association learned. This increase is "doubly significant" because the city's population, as shown by the number of food ration cards, decreased by 14%. Requests for sputum examinations in Paris laboratories increased greatly. The average number of positive results, that is, a result showing presence of tuberculosis germs in the sputum, increased from 59.1 per 100,000 examinations in 1939 to 211 per 100,000 in 1941.

The United States is the only nation so far unaffected by a war increase in tuberculosis, so far as authentic reports show. The 1941 rate was 44.4 cases per 100,000 population, a decline from the 45.9 per 100,000 figure of 1940, and preliminary data for 1942 indicate a continued slight decline in the TB death rate for our first year of war.

"Unconfirmed, but repeated, press reports emphasize a pronounced recent increase in the incidence of tuberculosis, diphtheria and scarlet fever in Germany," the association states in its current Bulletin. "Detailed reports signed by accredited physicians or statisticians covering vital statistics in Germany for the past year or two are not available."

Alarming increases in the disease have also been reported from China, Greece, the Low Occupied Countries and Poland, but no authoritative figures are available.

No significant reports on tuberculosis from Russia, Italy or Finland could be found by the association's statistical service.

Between 1939-1941 tuberculosis deaths in England and Wales increased 10%.

In Scotland the increase was even higher, 18%. Canada reports an increase in the tuberculosis death rate in 1941 of 5% over the 1940 rate, adding that this is the first appreciable increase in the disease in that country in 15 years.

Science News Letter, November 28, 1942

PHARMACY

American Atabrine Proves Identical to Foreign Drug

► CONTROVERSY over whether atabrine, the anti-malarial just made official in this country, is identical and equal to the original product developed in Germany, has now been settled in favor of America's chemists.

A report issued by the National Research Council establishes the fact that the drug manufactured in this country is comparable in every respect with that produced in other countries, according to the *Journal of the American Medical Association* (Nov. 14).

Atabrine, chemically known as quinacrine, is now in mass production as a substitute for war-scarce quinine using the process developed abroad. But chemists here have also found their way through the intricate steps of chemical synthesis which produce the bright yellow crystals used to combat malarial fever.

Unpleasant side-actions sometimes accompanying the administration of the drug led to the suspicion that there might be defects in the manufacturing process or impurities present. Doubts have been dispelled by investigations in leading institutions throughout the country which indicate that these minor difficulties are inherent in the atabrine itself, as occurs in many standard medicines.

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"Khaki" is the Hindu word for "dusty" or "dust-colored," derived from the Persian word "khak," meaning dust.

Who would enjoy these gifts?

1. A year of SCIENCE NEWS LETTER would be enjoyed by any man or woman who wishes ideas or scientific facts to liven and point up the conversation; a *business executive* with war-born problems; a *teacher* who likes new ideas to infiltrate to students; a *parent* who has a mentally acquisitive child; a *speaker* who can turn scientific knowledge into forceful argument toward intensified war effort; an *engineer* who can match it with something else he knows and go ahead with a project; *scientists and professional men and women* of all sorts who soak up ideas and relate them to their work.

2. A year of "THINGS of science" would be enjoyed by an adult, or younger person who likes to DO things, and enjoys thinking and learning at the same time. Someone who likes to EXPERIMENT. Someone who is interested in NEW IDEAS, NEW INFORMATION, someone who always wants to FIND OUT.

Two Science Christmas Gifts

There are people you know—adults or younger people—who share your interest in science. Who are they? The suggestions at the left may assist you in thinking of them.

Wouldn't one or more of them appreciate a science gift from you this year? It could be a subscription to Science News Letter or a membership to receive "THINGS of science." These are repeating gifts that cause people to think of the giver again and again throughout the year.

Science News Letter subscriptions are \$3.50 each when two or more annual subscriptions are ordered at one time. (One of these may be an extension of your own subscription.) A single 1-year subscription is \$5.00.

Memberships to receive "THINGS of science" are \$4.00 each. Each month, members get one or more science objects to be examined, to be studied, to be enjoyed. In each unit there are museum-style legend cards for each piece of material included, plus a brief, clear explanation of the entire contents. Members see, feel of, test, try out the science objects in the unit. Experiments are often suggested. Adult members find new hobbies, new interests; while young members from grade school and upwards, are fascinated with "THINGS of science."

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Each 1-year membership in THINGS of science is \$4.00.

ETHNOLOGY

White Men Seem Stingy

Advent of whites in South Pacific Islands upset native economic balance which depended on giving. New diseases were brought in, but cannibalism wiped out.

► IF OUR SOLDIERS in the South Pacific are finding the cheerful, fuzzy-haired natives hospitable and courteous, this is partly because the black man has now grown accustomed to the strange, stingy habits of the white man.

In the old days, if a soldier had refused to give away his rifle, machete, or any other gadget which attracted the fancy of a native, he was apt to be regarded as a shiftless fellow, with no social standing. For prestige in those islands depended—and still does, to a large extent—not on how much you could accumulate but how much you could give away.

The prominent men in the community, the chiefs, were those who gave the most valuable presents—the finest woven mats, the most pungent scented coconut oil, the biggest turtles. Any citizen was entitled to ask for, and receive, anything he wanted from his large clan of blood relatives. This kept the slow-tempoed tropical islanders hopping. It was hard enough to wrest food for themselves and their immediate families, and to save up enough for the innumerable feasts celebrating weddings, pregnancy, birth and all the other festive occasions. To keep up his social position, a Melanesian had to give away much more than that.

First the missionaries tried to graft European habits of thrift and industry (that is, industry for oneself and immediate family) on this communal system.

Then the British administrators, in good-natured concern over the feast system, which periodically cleaned the host out of all his food, succeeded pretty well in undermining this system of values. In the "famine isles" of Fiji and New Hebrides, for instance, the groom's family used to be economically exhausted for months after a big wedding. Also from worthy motives, the British distributed rice during hurricanes and subsequent famines.

As a result, the delicate economic balance was upset. The intensively competitive system of giving and receiving had worked out pretty evenly in the long run. But when their gift-giving prestige was questioned, the authority of the big men, the chiefs, was also undermined.

In Fiji the natives no longer worked so hard; their incentive had been taken away. They began to solicit more than they gave, and to solicit from any newcomer, rather than just blood-relatives. Western prosperity came to the islands with the coconut-oil boom after the last war, and the traders' "store-bought" goods began to seem much more glamorous than home-made mats. But the great depression hit Fiji in 1931, and since then the suddenly-deprived natives have largely gone back to their neglected gardens, their woodwork, barkcloth, and canoes. They still depend on metal axes, cloth, soap and cooking pots from the western world, however. They learned from missionaries that soap was better form than their sandalwood oil and fine, pungent scents.

Meanwhile, about 65 years ago the British had imported Indian labor to cultivate the neglected sugar fields, and the fast-multiplying Indians have all but crowded the Fijian off his isles.

Another unfortunate result of the white man in the south Pacific has been the disease he invariably carries with him. While the natives had suffered from stomach complaints, dysentery, colds and skin diseases of various malignant sorts, the white man brought syphilis, tuberculosis, and what we lightly call "children's diseases."

The worst epidemic Fiji ever had was

● RADIO

Saturday, December 5, 1:30 p.m., EWT

"Adventures in Science," with Watson Davis, director of Science Service, over Columbia Broadcasting System.

Dr. Leverett D. Bristol, medical member, Office of Price Administration, will talk on the health aspects of fuel rationing.

Monday, November 30, 9:15 a.m., EWT; 2:30 p.m., CWT; 9:30 a.m., MWT; and 1:30 p.m., PWT

Science at Work, School of the Air of the Americas over the Columbia Broadcasting System, presented in cooperation with the National Education Association, Science Service and Science Clubs of America.

"The Magic of Matter" will be the subject of the program.

a bout of measles in 1875, the year after Great Britain annexed the islands. This wiped out one-third of the population, and aged Fijians still tell of the tragic mass burials on their islands.

The white man has generally succeeded, however, in stamping out cannibalism, particularly in the Fijis and New Caledonia, although New Guinea head-hunters went on the warpath last year, when the British withdrew before the Jap advance, and there may be more outbreaks. But everything considered, anthropologists usually agree that the white man has taken more from the Pacific isles than he has given.

Science News Letter, November 28, 1942

RESOURCES

Persimmon Leaves Are Rich in Vitamin C

► WHEN TEA joins coffee on the list of scarcities, don't worry. Brew yourself a tasty cup from persimmon leaves—if you live where persimmons grow. It's good for you; full of scurvy-preventing vitamin C.

Prof. C. G. Vinson of the University of Missouri and Prof. F. B. Cross of Oklahoma A. and M. College report (*Science*, Nov. 6), that green persimmon leaves are rich in this essential vitamin. Freshly dried leaves sometimes have an even higher concentration. Green fruits also contain the vitamin, though not as much of it as the leaves; the vitamin apparently disappears to a large extent as the fruit ripens.

Tea made from chopped-up dried leaves was found to be a good vitamin source, and tasted rather well with a little sugar—"similar to sassafras tea." Real tea was also tested, but proved to have only about one per cent as much vitamin C as the decoction from persimmon leaves.

Science News Letter, November 28, 1942

BOOKS

SCIENCE NEWS LETTER will obtain for you any American book or magazine in print. Send check or money order to cover regular retail price and we will pay postage in the United States. If price is unknown, send \$5 and the change will be returned. When publications are free, send 10c for handling. Address:

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• New Machines and Gadgets •

❁ **OIL CANS** grown on the farm have recently been announced. They are made of fiber and are plastic lined. The fiber comes from straw and waste paper. The plastic may be made from corn or other grains, flaxseed, tallow, animal tissues, bone or clay. No special openers are required for the cans—a saving in itself. Just cut the thing open with your pocket knife. The containers are 10% lighter than the old tin cans. While designed for lubricating oil, we may eventually be getting our beer, beans and soup from such "cans."

Science News Letter, November 28, 1942

❁ **TO REMOVE** an incendiary bomb safely, a scoop of substantially rectangular shape with a cover has been invented and patented. The cover is so made that it can be slid forward and its front downturned edge placed beyond the bomb, which is thus immediately covered. The cover is then pulled back and the bomb is thereby drawn up into the scoop in which position it is completely enclosed. It may then be carried away and deposited in a safe place.

Science News Letter, November 28, 1942

❁ **PRACTICE YOUR** golf stroke at home. That is the object of a newly patented invention. Many such devices have been invented, but this one is different. The ball is attached to one end of a slender rod, to the other end of which a ring is attached. The ring goes over a stake in the ground or fastened to the floor. On this stake is a spiral spring. When you hit the ball, it revolves around this stake like a planet around the sun, but the ring climbs up the spiral spring, and the height to which it climbs measures the power of your swat. A knob at the top prevents it coming off entirely, should you be so strong.

Science News Letter, November 28, 1942

❁ **A POCKET STAPLING** device which is about the size and shape of a mechanical pencil, and is in fact combined with a mechanical pencil, is a clever invention recently patented. The stapler itself is near the top of the pencil, the punch-knob being just above the top of the clip. The shaft of the stapler passes transversely through the pencil, on the opposite side of which, projecting slightly, is the "anvil" which is slipped under the papers to be clipped together.

Science News Letter, November 28, 1942



❁ **ANTENNAE HOUSINGS** that look like bombs were part of the equipment on the B-25 bombers that raided Tokyo. They are tear-shaped structures made of plastic. When news of their part in Gen. Doolittle's flight reached the factory of these devices, the employees tripled production overnight.

Science News Letter, November 28, 1942

If you want more information on the new things described here, send a three-cent stamp to SCIENCE NEWS LETTER, 1719 N St., N. W., Washington, D. C., and ask for Gadget Bulletin 132.

ENTOMOLOGY—PUBLIC HEALTH

Fly Most Menacing Aerial Foe to Our Troops

➤ **THE FLY** is one of the most menacing aerial enemies of our fighting forces, both here and abroad, the Southern Medical Association was told by Lieut. Col. Dwight M. Kuhns of Lawson General Hospital, Atlanta.

As long ago as the Spanish-American War, the part that the house fly plays in the spread of diseases was discovered and put into practice for the protection of the health of, first, our troops, and then in later years the civilian population.

Thanks to the extensive introduction of modern methods of sewage disposal, the dangers of disease spread by flies has been partially forgotten by the public and even by the doctors and health officials. The men in the army have not realized the importance of safe disposal of human wastes under field conditions and the necessity of cleanliness in handling food wherever the troops may be.

Diarrhea and dysentery are the principal diseases spread by flies and they are particularly dangerous under tropical or semi-tropical conditions such as those under which our troops are operating in many parts of the world.

Lieut. Col. Kuhns explained that researches with troops on active service show that carriers of these diseases are more prevalent than commonly realized. Troops are being taught intensively the methods of sanitation that prevent dangers from these diseases.

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PALEONTOLOGY

Barylambda Placed on Display at Field Museum

➤ **BARYLAMBD**A, a beast that can be described only as "something out of this world," is now represented in the Field Museum by a practically complete skeleton that has just been mounted and placed on display. The big, bumbling beast, whose remains are found in western Colorado, lived in the days classified by geologists as late paleocene, which means very near the dawn of the age of mammals.

Paleontologists always get stuck when asked to describe Barylambda. He had an overall length of between eight and nine feet, was four feet high at the hips and nearly as wide across. He was probably the biggest, burliest brute of his day.

His head was little and his tail astonishingly big. It is conjectured that he may have used it for a fifth leg, like present-day kangaroos. His teeth indicate that he was a vegetarian.

And there isn't any animal alive today that is even remotely related to him, or even faintly resembles him. Not even scientists would believe he had ever existed, if they didn't have his formidable bones to explain.

Science News Letter, November 28, 1942

LEARN SPANISH

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It's easy to learn to speak, read and write Spanish this popular new way...and it takes only 1/2 of the time usually required to master a foreign language. Play Solitaire or play the Course with a member of your family or while you entertain friends. Prepares for the thousands of post-war opportunities that will be available to Spanish-speaking men and women when trade with our Latin-American neighbors is at its peak. Remember...2, 3 or 4 persons can learn at no extra cost. 4 decks of cards and Cloth-Bound Text Book, only \$2 postpaid.

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First Glances at New Books

► UP TO DATE material for the radio engineer is found in **FREQUENCY MODULATION** by August Hund (McGraw-Hill, \$4). Thorough treatment of this relatively new field includes application of mathematical formulas in gradual steps. Useful comparison of the amplitude, phase and frequency types of modulation, is also made.

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► **WAR DEMANDS** call for many more persons trained in drawing. **MECHANICAL DRAWING**, by Ervin Kenison, James McKinney and Tom C. Plumridge (American Technical Society, \$2) is a book for the beginner studying at home after work, as well as for the school student. It is profusely and well illustrated.

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• **SECRET AGREEMENTS** between American and Nazi corporations, patent monopolies, and the hamstringing of our war production are charged in **PATENTS FOR HITLER**, by Guenter Reimann (Vanguard, \$2.50) which utilizes data gathered by Congressional committees and the Department of Justice. Hitler's secret weapon was "the spider web of cartels, patent exchanges, licensing arrangements, divisions of territory, etc., concluded between German industrial concerns and those of other nations."

Science News Letter, November 28, 1942

► **"GOOD SHOW"**! That is what the RAF lads say when they bring down the enemy. You can have a taste of it as experienced by Squadron Leader "B. J. Ellan" if you read his **SPITFIRE! THE EXPERIENCES OF A FIGHTER PILOT** (John Murray, \$1.50). You will get a glimpse, too, of the sort of emotional conflict that makes a man glad that he didn't have any ammunition left to shoot a German pilot, helpless with his gunner dead, although if he had had the ammunition he "would have done it, not because I hated that German personally—I didn't know who he was—but because I wanted to and got a kick out of it."

Science News Letter, November 28, 1942

► **AVERAGE INTELLIGENCE** is all a person requires to achieve a clear grasp of the essentials of arithmetic through trigonometry, and some of the elements of physics, in **A MATHEMATICAL REFRESHER** by A. Hooper, American Edi-

tion (Holt, \$1.90). The original English edition was written for Royal Air Force candidates who found their mathematics rusty or had not properly grasped the subject at school.

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► **THE PEAKS AND VALLEYS** of human progress are outlined in **A MILLION YEARS OF HUMAN PROGRESS**, by Ira D. Cardiff (Dorset House, \$2.). "Taking things for granted," was one of the main causes of the many downward plunges of civilization in the past, Mr. Cardiff finds, and is a dangerous menace today.

Science News Letter, November 28, 1942

► **FIRST WEAPON** of defense is understanding of the enemy. An exposure of the Nazi plans for the war of nerves and other attacks on the minds of their opponents is contained in **GERMAN PSYCHOLOGICAL WARFARE**, edited by Ladislav Farago for the Committee for National Morale (Putnam, \$3) now published in a new cloth-bound edition.

Science News Letter, November 28, 1942

► **LIFE AND ACHIEVEMENT** are moulded by the weather according to Clarence A. Mills, in **CLIMATE MAKES THE MAN** (Harper \$3.). Climate affects our rate of growth, speed of development, resistance to infection, fertility of mind and body, happiness and length of life. The whole story of human history can be better understood when climatic factors are borne in mind. Dr. Mills also punctures some myths regarding climatic factors, and discusses the effects of drugs and stimulants.

Science News Letter, November 28, 1942

► **FIRE LOSSES** can hamper the war effort, even without incendiary raids. Teachers, civilian defense workers and others interested in community protection will find **FIRE PREVENTION EDUCATION** by Charles C. Hawkins (National Board of Fire Underwriters, 85c; 10 to 50 copies, 50c; special rates for quantity orders), a thorough manual. One section is devoted to fire prevention and protection programs for schools; the second section concerns community programs.

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Just Off the Press

ALUMINUM: A MAGIC MINERAL—Lilian Holmes Strack—Harper, 56 p., illus., \$1. Juvenile.

AMERICA'S FUTURE—Fern Long—American Library Association—9 p., 25c. Reprint of Vol. 36, No. 13, Part II. The second of the series of reading lists prepared by the adult education field worker of the Cleveland Public Library.

A. S. T. M. STANDARDS ON PETROLEUM PRODUCTS AND LUBRICANTS—A. S. T. M. Committee D-2—American Society For Testing Materials, 442 p., illus., \$2.25.

AN ELEMENTARY COURSE IN QUALITATIVE ANALYSIS—William Lloyd Evans, Jesse Erwin Day and Alfred Benjamin Garrett—Ginn, 240 p., \$2.25. New edition.

DRIVES TOWARD WAR—Edward C. Tolman—Appleton-Century, 118 p., \$1.25.

THE EFFECTIVE USE AND PROPER CARE OF THE MICROTOME—Oscar W. Richards—Spencer Lens Company—88 p., illus., 25c.

ELEMENTARY METEOROLOGY—Vernor C. Finch, Glenn T. Trewartha, M. H. Shearer and Frederick L. Caudle—McGraw-Hill, 301 p., illus., \$1.76. A book designed for secondary school students which gives the principles of meteorology. "Two chapters apply these principles to the problem of aviation."

GLIMPSES INTO CHILD LIFE: The Twelve-Year-Old at Home and School—Rose Zeligs—Morrow, 442 p., \$3. Based on study of normal children and written by a public school teacher. Gives parents new insight into the interests, attitudes and

development of their adolescent children. **INTRODUCTORY CHEMISTRY FOR THE LABORATORY**—Alfred B. Garrett, Laurence L. Quill, and Frank H. Verhoek—Ginn, 240 p., \$1.60. Text-book for first-year course in chemistry.

LABOR RELATIONS AND THE WAR—Herman Feldman, ed.—The American Academy of Political and Social Science, 244 p., \$2, paper, \$2.50 cloth to non-members; \$1, paper, \$1.50 cloth to members. Vol. 224, Nov. 1942 of the Annals of the American Academy of Political and Social Science.

THE MAN BEHIND THE FLIGHT—Assen Jordanoff—Harper, 317 p., illus., \$3.50. "A Ground Course for Aviation Mechanics and Airmen". Nicely illustrated.

MANUAL FOR THE MICROSCOPICAL DIAGNOSIS OF MALARIA IN MAN—Aimee Wilcox—United States Govt. Print. Off., 79 p., illus., 30c.

SCIENCE IN WAR—Philadelphia College of Pharmacy and Science, 97 p., \$1. Popular Science talks, vol. XIV. A series of popular science lectures given by the members of the faculty of the Philadelphia College of Pharmacy and Science.

WINGED MARS: Vol. I, The German Air Weapon, 1870-1914—John R. Cuneo—Military Service Publishing Co., 338 p., \$2.50.

WORKBOOK IN METEOROLOGY—Athelstan F. Spilhaus and James E. Miller—McGraw-Hill, 163 p., illus., \$2.50, accompanying maps, 50c.